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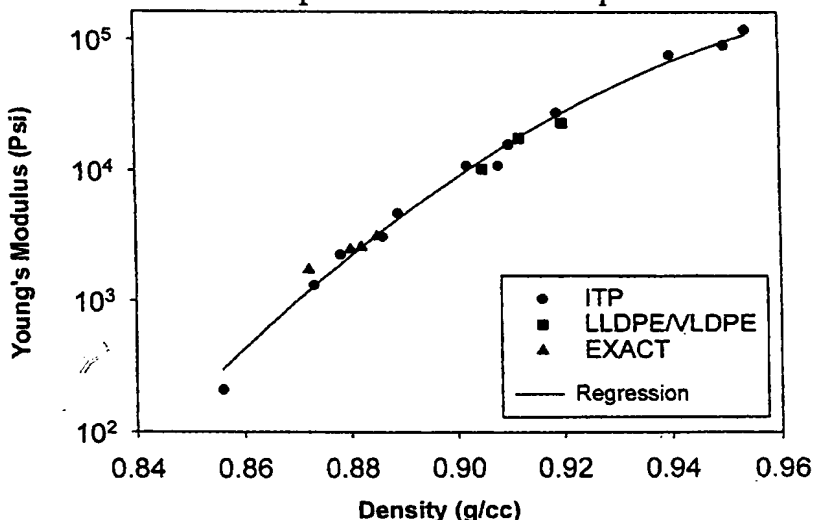
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[Continued on next page]

(54) Title: HIGH CLARITY, HIGH STIFFNESS FILMS

## Modulus vs. Density of Polyethylenes

### Compression Molded Plaques



$$\text{Log}(\text{Modulus}) = -130.0787 + 270.267 \cdot \text{den} - 134.832 \cdot \text{den}^2, r^2 = 0.99$$

(57) Abstract: A multi-layer heat film having at least three layers is disclosed wherein the film has high optical properties, high stiffness and desirable shrinkage in the cross direction. The inner layer, or layers, comprises at least one stiffening polymer selected from the group consisting of: low density polyethylene, linear low density polyethylene, high density polyethylene, blends thereof, polypropylene random copolymer, styrene/butadiene copolymer, polystyrene, ethylene-vinyl acetate copolymer and cyclic-olefin copolymer, provided that when more than one inner layer is present, the inner layers can be the same or different. The skin layers, which may be the same or different, comprise at least one of: low density polyethylene; a blend of low density polyethylene and linear low density polyethylene; a blend of low density polyethylene and very low density polyethylene; polystyrene;

ethylene-vinyl acetate copolymer; a blend of ethylene-vinyl acetate copolymer and linear low density polyethylene; cyclic-olefin copolymer; styrene-butadiene copolymer; or, polypropylene random copolymer, provided that the skin layers are devoid of a homogeneously branched polyethylene resin prepared with a single site catalyst. The inventive films have haze values of less than about 15%, a 2% secant modulus greater than about 50,000 psi and a cross directional shrinkage greater than 0%. The inventive films are made by a process that does not include post-extrusion bi-axial orientation.

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